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By-Forlano, George; Abramson, Jack

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This ESEA/Title I project reports a longitudinal comparison of pupils from 21 More Effective Schools (MES) with pupils from nine control schools in New York City. The Metropolitan Achievement Tests were administered to pupils in grades 2 through 6 in all MES and in selected control schools. Alternate forms were used at initial testing time in October 1965 and at final testing time in April 1967. Data were treated in three ways: (1) Growth in grade scores was compared with normal growth over the periods involved. (2) MES pupils' gain in grade scores was compared with the gain in grade scores achieved by a comparable group in control schools over the same period of instruction. (3) A comparison was made of deviations from the norms at initial and at final testing times of the obtained median grade score of MES and of control groups. The MES as a group were more effective than the control schools in reducing retardation of their pupils and in producing larger percents of pupil who reached and surpassed the norm between initial and final testing times. Tables are included. (WB)

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MEASURING PUPIL GROWTH IN READING IN THE
MORE EFFECTIVE SCHOOLS

Prepared by

George Forlano and Jack Abramson

BUREAU OF EDUCATIONAL RESEARCH
Samuel D. McClelland, Acting Director
George Forlano, Assistant Administrative Director

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Measuring Pupil Growth in Reading in the More Effective Schools

Purpose

The major question for which data will be presented is, "What measurable effect does the More Effective Schools Program have on pupil growth in reading?" This report presents evidence on the extent of pupil growth in reading achievement in More Effective and control schools in terms of standardized test results.

The specific questions to be answered are as follows:

1. What is the progress of the children in the More Effective and control schools as compared to normal progress indicated in national norms?
2. How does progress in reading achievement of children in More Effective schools compare with that of children in control schools when the schools are group matched, and when they are individually paired?
3. How does progress in reading achievement in selected More Effective schools and selected control schools compare when all participating schools are special service schools?¹

Design of the Study

Participating in this study were 21 More Effective schools of which ten were launched into the program in the Fall of 1964 and the remaining eleven schools entered the program in the Fall of 1965 one year later. In this report the former are named Old ME schools and the latter the New ME schools. As to the control schools nine, six for the Old ME S comparison and 3 for the New MES comparison, were available and participated in the evaluation program. In all groups of schools, Old, New and control, both special service and non-special service schools were involved. Control and ME schools selected were comparable in ethnic composition.

We wish to thank Mildred Farberman, Sylvia Wallberg and Jean Friedenberg for their assistance in the processing of the test data essential for the report.

1. Special service schools are schools, where among certain other factors, the per cents of pupils on free lunch, the per cents of pupils with language handicaps and the pupil mobility per cents are relatively high.

In seeking answers to the major question, this study utilized the longitudinal approach in the analysis of the data and employed control groups in all comparisons with groups enrolled in the More Effective Schools Program. The longitudinal aspect of the study ensured that the pupils in the ME schools and the pupils in the control schools were enrolled in their respective schools over the period between the initial and final tests. Thus the effect of the factor of pupil mobility tended to be equalized for both groups, at least over the period studied. Moreover, both groups had continuous instruction in their respective educational programs and, consequently, the full effects of the programs were assumed to be operative.

The Metropolitan Reading Achievement Tests were administered to pupils in grades 2 through 6 in all ME schools and in selected control schools. Different forms of the Metropolitan Test were given at initial test time in October, 1965 and final test time in April, 1967. The period of time between pretest and posttest was 1.6 school years. All analyses of the data involved longitudinal studies of pupil achievement. Citywide reading survey test data were used.

Three methods of treating the data were utilized. In assessing the achievement of the pupils in the Old and New schools of the MES program, growth in grade scores on the Metropolitan Test was compared with normal growth over the periods involved.¹ A second aspect of assessing the achievement of the MES pupils was to compare their gain in grade scores on the Metropolitan Test with the gain in grade scores achieved by a comparable group of pupils in control schools over the same period of instruction. Lastly, a comparison of deviations

1. Reading achievement results were presented in an earlier report: Evaluation of the More Effective Schools Program Summary Report, Bureau of Educational Research, Board of Education of the City of New York, 1966. Pp. 29-35.

from the norms at initial and final test times of the obtained median grade scores of the ME and control groups was undertaken.¹

In this report the analysis of the data involved mainly test results on the reading comprehension subtest and, to a lesser extent, the word knowledge subtest of the Metropolitan Reading Achievement Test. Results for the Old ME schools and the New ME schools are presented separately.

Reading Progress in Group Matched ME and Control Schools

Comparison of Old ME and Control Schools

In presenting the data for the ten Old ME schools the results were combined and compared with the combined results of the six control schools. However, at the sixth grade only the results of three Old ME schools and their 3 control schools were available because of the fact that some of the schools concerned did not have a K-6 organization.

For the Old ME schools two groups of children were formed; (1) those who had three years of the MES program from October, 1964 to April, 1967 and (2) those who had almost two years of the MES program from October, 1965 to April, 1967. For the New ME schools, because of later entrance into the ME program, only one group could be formed at this time, namely, those children who were enrolled in the ME program for almost two years from October, 1965 to April, 1967.

Comparative test data for the control schools became available with the start of the citywide testing program in reading in October, 1965. In the control schools, pupils were selected who had almost two years of continuous instruction in the same school over the period October, 1965 to April, 1967.

1. The norms used in this study are national total age group norms based on representative pupil populations across 48 states. These norms are not urban norms.

The ME and the control schools were matched on the ethnicity data available as of October, 1964. For example, the overall per cents of Puerto Rican, Negroes and Others in the 10 Old ME schools combined were 25.8, 54.9 and 19.3; the corresponding per cents in the 6 control schools combined were 29.4, 50.8 and 19.8 respectively.

Table 1 presents the comparative data for the two MES groups in the ten Old ME schools and the 6 control schools. Median grade scores obtained at final test time in April, 1967, the seventh month of the school year, are compared with the norm at the latter test date. The comparisons of norm-median for the groups involved provide bases for judging relative placement in relation to the norms.

Table 1

Comparison of Reading Grade Scores for Pupils Having Full
or Partial MES Experience with Pupils in Control Schools
By Grade -- Old ME Schools

Grade as of 4/67	Education	N	Median	Q ₃	Q ₁	Norm	Comparison Norm-Median
Third	3 Years of MES	564	3.7	4.5	3.2	3.7	at norm
	2 Years of MES	108	3.5	4.0	3.1	3.7	- .2
	No MES	569	3.4	4.1	2.9	3.7	- .3
Fourth	3 Years of MES	538	4.1	4.9	3.5	4.7	- .6
	2 Years of MES	210	3.7	4.5	3.2	4.7	-1.0
	No MES	602	3.7	4.7	3.2	4.7	-1.0
Fifth	3 Years of MES	544	5.0	6.1	4.2	5.7	- .7
	2 Years of MES	203	4.8	6.1	4.1	5.7	- .9
	No MES	548	4.5	5.5	3.6	5.7	-1.2
Sixth	3 Years of MES	187	6.0	7.6	4.8	6.7	- .7
	No MES	271	5.9	8.1	4.9	6.7	- .8

A survey of the data in Table 1 under the caption Comparison Norm-Median shows that at the third grade the pupils with three years of MES instruction achieved a median grade score of 3.7, that is, as a group they were at the norm in April, 1967. The third grade group with two years of MES instruction obtained a median grade score of 3.5 which placed them as a group .2 of a school year below the norm ($3.7 - 3.5$). The control third grade group (No MES) achieved a grade score of 3.4 and thus tested .3 of a school year below the norm ($3.7 - 3.4$). Thus at grade three the No MES group was .3 of a school year more retarded than the 3 year MES group and .1 of a school year more retarded than the 2 year MES group.

At the fourth grade the differences between the norm and the median grade score for the 3 year MES group, the 2 year MES group and the No MES group were -.6 of a school year, -1.0 school year, and -1.0 school year respectively. At grade four the No MES group was .4 of a school year more retarded than the 3 year MES group but was functioning on par with the 2 year MES group.

At the fifth grade the No MES group was .5 of a school year more retarded than the 3 year MES group (1.2, -.7) and .3 of a school year more retarded (-1.2, -.9) than the two year MES group. At the sixth grade the No MES group was .1 of a school year more retarded than the 3 year MES group (-.8, -.7). It may be recalled that the results for the sixth grade are based on pupils from three MES schools and three No MES schools. Nevertheless, the comparison at this grade was undertaken in order to secure some evidence at the sixth grade.

Overall while only at the third grade did the 3 year MES group reach the norm for the grade, the No MES groups always were more retarded in relation to the norm than were the corresponding 3 year MES groups. In addition, at grades 3, 4, and 5, where data were available, the 2 year MES groups were less retarded than the corresponding No MES groups at grades three and five; at grade 4 both groups showed the same amount of retardation at final test time.

Another required analysis served to compare the gain in grade score of MES

and No MES groups over the period October, 1965 and April, 1967. In other words, which of the three groups gained the most? The comparative analysis of reading growth of MES and No MES groups over an elapsed period of 1.6 school years is presented in Table 2.

Table 2

Comparison of Median Grade Score Gains with Elapsed Time for Pupils Having Full and Partial MES Experience with Pupils in Control Schools by Grade - Old ME Schools

Grade as of 4/67	Education	N	10/65	4/67	Grade Score Gain	Elapsed School Years
Third	3 Years of MES	564	1.8	3.7	1.9	1.6
	2 Years of MES	108	1.6	3.5	1.9	1.6
	No MES	569	1.8	3.4	1.6	1.6
Fourth	3 Years of MES	538	2.7	4.1	1.4	1.6
	2 Years of MES	210	2.3	3.7	1.4	1.6
	No MES	602	2.4	3.7	1.3	1.6
Fifth	3 Years of MES	544	3.5	5.0	1.5	1.6
	2 Years of MES	203	3.3	4.8	1.5	1.6
	No MES	548	3.3	4.5	1.2	1.6
Sixth	3 Years of MES	187	4.6	6.0	1.4	1.6
	No MES	271	4.6	5.9	1.3	1.6

As indicated in Table 2, at the third grade the 3 year MES and 2 year MES groups gained 1.9 school years as compared to a gain of 1.6 school years for the No MES group over the 1.6 school year period of instruction. Thus the two MES groups gained .3 of a school year, that is, 3 school months or about 19 per cent more than the control group over the elapsed period.

At the fourth grade the two MES groups gained .1 school year (1.4 - 1.3) more than the corresponding control group. At the fifth grade the two MES groups gained .3 of a school year (1.5 - 1.2) more than control group, while at the sixth grade the gain of the MES group over the control was .1 of a school year (1.4 - 1.3). Overall there is a consistent pattern of more gain in grade score by the MES groups when compared with the gains of the corresponding control groups; the MES gains over the controls varied from 1 to 3 school months.

Up to this point two analyses of the results of the Old MES groups and the control groups were made. In the first analysis the groups were compared in achievement status in April, 1967 in relation to the norm at the time of testing. In the second type of analysis the focus was on the amount of growth achieved by the compared groups over the period between October, 1965 and April, 1967.

In the third type of analysis, using the same data for Old and New ME schools and controls, the levels of achievement of all groups in relation to the norm at initial test time in October, 1965 were compared to the levels of achievement of the groups in relation to the norm at final test time. For each school group at each grade, the difference between the median grade score and norm at initial test time and the difference between the median grade score and the norm at final test time in April, 1967 were computed. For each group its initial deviation from the norm was then compared with its final deviation from the norm to obtain the net change in relation to the norms over the period from October, 1965 to April, 1967.

It was felt that this type of analysis was a more rigorous one to follow in an effort to determine the effect of years of MES instruction in reading. This analysis utilizes all data from initial and final testings and thus provides overall net positive or negative changes in reading improvement. Specifically, the analysis provides comparisons in deviations from the norm for all groups even when initial reading levels are not equal.

The comparison of the norms and the median grade scores in reading compre-

hension at initial and final test times along with the net changes in relation to the norms over the period studied are presented in Table 3. The results, by grade, are presented again for 3 year ME, 2 year ME and control groups.

Table 3

Comparison of Grade Norms and Median Grade Scores on the Metropolitan Reading Comprehension Initial and Final Tests for Pupils with Full and Partial MES Experience with Pupils in Control Schools by Grade - Old ME Schools *

Grade as of 4/67	Education	N	10/65		Md-N Diff.	4/67		Md-N Diff.	Net Change
			Median	Norm		Median	Norm		
Third	3 Years of MES	564	1.8	2.1	- .3	3.7	3.7	.0	+ .3
	2 Years of MES	108	1.6	2.1	- .5	3.5	3.7	-.2	+ .3
	No MES	569	1.8	2.1	- .3	3.4	3.7	-.3	.0
Fourth	3 Years of MES	538	2.7	3.1	-.4	4.1	4.7	-.6	-.2
	2 Years of MES	210	2.3	3.1	-.8	3.7	4.7	-1.0	-.2
	No MES	602	2.4	3.1	-.7	3.7	4.7	-1.0	-.3
Fifth	3 Years of MES	544	3.5	4.1	-.6	5.0	5.7	-.7	-.1
	2 Years of MES	203	3.3	4.1	-.8	4.8	5.7	-.9	-.1
	No MES	548	3.3	4.1	-.8	4.5	5.7	-1.2	-.4
Sixth	3 Years of MES	187	4.6	5.1	-.5	6.0	6.7	-.7	-.2
	No MES	271	4.6	5.1	-.5	5.9	6.7	-.8	-.3

* In grades 3, 4 and 5 pupils were drawn from 10 ME schools and 6 control schools; in grade 6 participating pupils were from 3 ME schools and 3 control schools.

At the third grade the 3 year MES group and the 2 year MES group both improved their status in relation to the norm by .3 of a school year over the 1.6 school year period. For example, the 3 year MES group showed a difference

of .3 of a school year between the median grade score of 1.8 and the norm (2.1 - 1.8) at initial test time; the corresponding difference (Md-N) at final test time was zero resulting in a net change of +.3 of a school year. The third grade 2 year MES group also showed a positive net change of .3 of a school year in relation to the norms over the period studied. On the other hand, the No MES group showed a difference (Md-N) of -.3 both at initial and final test times resulting in a net change of zero.

At the fourth grade the two MES groups returned net changes of -.2 while the No MES fourth grade group returned a net change of -.3 over the period October, 1965 to April, 1967.

At the fifth grade the two MES groups returned net changes of -.1 as compared to a net change of -.4 for the No MES group.

At the sixth grade the 3 year MES group showed a net change of -.2 while the No MES group registered a net change of -.3.

At grades 3, 4 and 5, where data for the 3 year and 2 year MES groups were available, the net changes for these two groups were equivalent. However, at each of these grades the 3 year MES groups always attained a higher grade score at final test time. For example, at grade 3 in April, 1967 the 3 year MES group attained a grade score of 3.7 as against a grade score of 3.5 for the 2 year MES group. At the fourth grade, the 3 year MES group achieved a median grade score of 4.1 in April, 1967 while the 2 year MES group tested at 3.7. At the fifth grade the grade score of the 3 year MES group was 5.0 as compared to 4.8 for the 2 year MES group. Both of these two MES groups generally achieved higher median grade scores at final test time as compared to those of the control groups at grades 3, 4 and 5.

In summary, in comparison with MES groups in the Old ME schools the control groups revealed less improvement in reading level in relation to the norms. The amount of superiority in improvement of the MES groups over the control groups

varied from .1 of a school year at the fourth and sixth grades to .3 of a school year at the third and fifth grades. Overall, the gains though not all large, reveal a consistent pattern of improvement in favor of the MES groups. In terms of grade score achieved at final test time a moderate positive relationship may be discerned between length of time of MES experience and reading level attained.

Comparison of New ME and Control Schools

The comparisons of the MES and control groups involving the New ME schools also were undertaken. Comparisons of the obtained grade scores in April, 1967 with the norm at the time of testing were made. Test data for the ten New ME schools were combined; similar data for the three control schools were combined.¹ The two groups of schools were matched on ethnicity in the same manner followed in the matching of the Old MES and control schools. At the sixth grade, results could only be obtained for three ME schools and one control school. Since the New ME schools were launched in the Fall of 1965 the MES pupils were enrolled in their schools for about two years. The pupils who served as controls also were enrolled in their respective schools for about two years.

The median, Q_3 and Q_1 , and the difference between the norm and the obtained median grade score for each grade for the two groups of schools are presented in Table 4.

1. One New ME school could not be utilized because it was a K-2 type of school.

Table 4

Comparison of Reading Grade Scores for Pupils Having
Two Years of MES Experience with Pupils in Control
Schools by Grade - New ME Schools

Grade as of 4/67	Education	N	Median	Q3	Q1	Norm	Comparison with Norm
Third	2 Years of MES	458	3.6	4.3	3.1	3.7	- .1
	No MES	202	3.3	3.7	2.9	3.7	- .4
Fourth	2 Years of MES	547	4.1	4.9	3.5	4.7	- .6
	No MES	216	3.7	4.7	3.2	4.7	-1.0
Fifth	2 Years of MES	492	4.8	5.8	4.1	5.7	- .9
	No MES	204	4.6	5.6	3.7	5.7	-1.1
Sixth	2 Years of MES	220	5.7	7.3	4.7	6.7	-1.0
	No MES	73	5.3	6.9	4.5	6.7	-1.4

As indicated in Table 4, the 2 year MES third grade group obtained a median grade score of 3.6 compared to a median grade score of 3.3 for the No MES group. As compared with the grade norm of 3.7 the MES group was .1 of a school year below the norm while the control group was .4 of a school year below the norm. Thus the MES group was .3 of a school year (-.4, -.1) less retarded than the control group.

At the fourth grade the MES group was .4 of a school year (-.6, -1.0) less retarded than the corresponding control group; at the fifth grade the MES group was .2 school year (-.9, -1.1) less retarded than the control group while at the sixth grade the MES group was .4 school year less retarded than the control group.

The test data showing the comparative gains in grade score of the New MES and control groups over the period October, 1965 and April, 1967 are presented in Table 5.

Table 5

Comparison of Median Reading Grade Score Gains with Elapsed Time for Pupils Having Two Years of MES Experience with Pupils in Control Schools by Grade - New ME Schools

Grade as of 4/67	Education	N	10/65	4/67	Grade Score Gain	Elapsed School Years
Third	2 Years of MES	458	1.6	3.6	2.0	1.6
	No MES	202	1.6	3.3	1.7	1.6
Fourth	2 Years of MES	547	2.5	4.1	1.6	1.6
	No MES	216	2.3	3.7	1.4	1.6
Fifth	2 Years of MES	492	3.3	4.8	1.5	1.6
	No MES	204	3.2	4.6	1.4	1.6
Sixth	2 Years of MES	220	4.2	5.7	1.5	1.6
	No MES	73	4.1	5.3	1.2	1.6

As indicated in Table 5, at the third grade the 2 year MES and control groups both obtained median grade scores of 1.6 school years in October, 1965. However, in April, 1967 the MES group at the third grade attained a median grade score of 3.6 as compared to a median grade score of 3.3 for the No MES group. The gain in grade score for the MES group was 2.0 school years; the corresponding gain for the control group was 1.7 which was .3 school year (3 school months) less than that of the MES group.

At the fourth, fifth and sixth grades the gains of the MES groups were also greater than those of the No MES groups; the gains varied from 1 school month (.1 school year) at the fifth grade to 3 school months (.3 school year) at the third and sixth grades.

A similar comparison of the net changes in relation to the norms at initial and final test times was undertaken utilizing the reading comprehension grade

scores of 10 New ME schools combined and the reading comprehension grade scores of 3 control schools combined at the third, fourth and fifth grades. At the sixth grade data were available for 3 New ME schools and 1 control school. The comparisons involve ME pupil groups who had 2 years of MES experience and pupil groups who were in control schools for 2 years. The results for the compared groups are presented in Table 6.

Table 6

Comparison of Grade Norms and Median Grade Scores on the Metropolitan Reading Comprehension Initial and Final Tests for Pupils with Two Years of MES Experience with Pupils in Control Schools by Grade - New ME Schools

Grade as of 4/67	Education	N	10/65 Median	10/65 Norm	Md-N Diff.	4/67 Median	4/67 Norm	Md-N Diff.	Net Change
Third	2 Years of MES	458	1.6	2.1	-.5	3.6	3.7	-.1	+.4
	No MES	202	1.6	2.1	-.5	3.3	3.7	-.4	+.1
Fourth	2 Years of MES	547	2.5	3.1	-.6	4.1	4.7	-.6	0
	No MES	216	2.3	3.1	-.8	3.7	4.7	-1.0	-.2
Fifth	2 Years of MES	492	3.3	4.1	-.8	4.8	5.7	-.9	-.1
	No MES	204	3.2	4.1	-.9	4.6	5.7	-1.1	-.2
Sixth	2 Years of MES	220	4.2	5.1	-.9	5.7	6.7	-1.0	-.1
	No MES	73	4.1	5.1	-1.0	5.3	6.7	-1.4	-.4

As indicated in Table 6, at the third grade the 2 year MES and control groups both obtained median grade scores of 1.6 school years in October, 1965 when both groups were .5 of a school year below the norm of 2.1. However, in April, 1967 the MES group was .1 of a school year below the norm while the control group was .4 of a school year below the norm. In terms of net change the MES group showed an improvement of .3 of a school year (+.4)-(+.1) as compared with the controls.

A review of all the net changes reveals that the MES groups showed more improvement in reading level in relation to the norms than did the control pupil groups. The net changes in relation to the norms in favor of the MES groups were from .1 of a school year at the fifth grade to .3 of a school year at the third and sixth grades. In general, the positive trend in favor of the new MES groups paralleled that observed in the comparisons involving the Old ME schools and their controls.

Reading Progress in Individually Paired ME and Control Schools

Reading Progress in Old ME and Control Schools

In the preceding sections of the report, the experimental and control schools were group matched in ethnic composition. The study of the two groups of schools was continued to include an analysis of the test results of schools individually paired on the ethnic factor. In these analyses the results in word knowledge as well as in reading comprehension were included.

The Old ME schools involved were 154M, 1X, 102X, 120K, 138K and 18R which were matched individually with six control schools in ethnic composition as of October, 1964. They were also matched on the presence or absence of the special service school factor. Of the six pairs of ME and control schools, 4 pairs consisted of special service schools and 2 pairs involved non-special service schools. Complete data for all schools concerned were available for grades 3, 4 and 5. In the Old ME schools the pupils were enrolled in the same schools for at least three years whereas in the Non-ME schools the pupils were enrolled in the same schools for at least two years. The earliest comparative test data available for both groups were for October, 1965.

The median grade scores obtained in October, 1965 and April, 1967 for grades 3, 4 and 5 over the elapsed period of 1.6 school years are given in Table 7.

Table 7

Comparison of Grade Norms and Median Grade Scores on the Metropolitan Reading Comprehension Initial and Final Tests for Pupils Having 3 Years MES Experience in 6 Old ME Schools with Pupils in 6 Paired Control Schools

Grade as of 4/67	Education	N	10/65		Md-N Diff.	4/67		Md-N Diff.	Net Change
			Median	Norm		Median	Norm		
Third	3 Years of MES	335	1.9	2.1	- .2	3.7	3.7	0	+ .2
	No MES	569	1.8	2.1	- .3	3.4	3.7	-.3	0
Fourth	3 Years of MES	302	2.7	3.1	- .4	4.0	4.7	-.7	- .3
	No MES	602	2.4	3.1	- .7	3.7	4.7	-1.0	- .3
Fifth	3 Years of MES	304	3.5	4.1	- .6	4.9	5.7	-.8	- .2
	No MES	548	3.3	4.1	- .8	4.5	5.7	-1.2	- .4

In addition, the norms as of October, 1965 and April, 1967 along with the differences between the obtained median grade score and each appropriate norm are given. In the last column at the right of the table are the net changes in these median-norm differences. The net change over the elapsed period of 1.6 school years for the third grade MES group was + .2 of a school year, that is, the group moved from an initial point .2 of a school year below the norm to a final point of 3.7 at the norm in April, 1967. On the other hand, the control No MES third grade group in October, 1965 was .3 of a school year below the norm and was still .3 of a school year below the norm in April, 1967 showing no growth or loss in relation to the norms.

At the fourth grade the MES group was .4 of a school year below the norm in October, 1965 and .7 of a school year in April, 1967 resulting in a loss of .3 of a school year. The control No MES group also showed a net loss of .3 of a school year over the same elapsed period.

At the fifth grade, however, there was a net change of $-.2$ of a school year for the MES group as compared to a net change of $-.4$ of a school year for the No MES group. In other words, this No MES group showed more retardation in relation to the norm than did the MES group.

In summary in two of the three comparisons between the Old MES and control groups the net changes indicated more improvement in reading on the part of the Old MES groups; at the fourth the net change for the two groups was identical. However, the grade scores achieved by the Old MES groups at final test time in April, 1967 were higher than those of the corresponding control groups at each grade level.

The results for the six pairs of Old MES and the No MES schools in word knowledge are presented in Table 8. In this analysis of the results in word knowledge the number of MES pupils involved at each grade was increased by adding pupils who were enrolled in the ME schools no less than two years to the original pupils who were enrolled in the ME schools for at least three years.

Table 8

Comparison of Grade Norms and Median Grade Scores on the Metropolitan Word Knowledge Initial and Final Testings for Pupils Having No Less Than 2 Years MES Experience in 6 Selected Old ME Schools with Pupils in 6 Paired Control Schools

Grade as of 4/67	Education	N	10/65			4/67			Net Change
			Median	Norm	Diff.	Median	Norm	Diff.	
Third	MES	419	1.9	2.1	$-.2$	3.6	3.7	$-.1$	$+.1$
	No MES	569	1.8	2.1	$-.3$	3.2	3.7	$-.5$	$-.2$
Fourth	MES	426	2.6	3.1	$-.5$	4.0	4.7	$-.7$	$-.2$
	No MES	602	2.3	3.1	$-.8$	3.7	4.7	-1.0	$-.2$
Fifth	MES	427	3.2	4.1	$-.9$	5.3	5.7	$-.4$	$+.5$
	No MES	548	3.1	4.1	-1.0	4.7	5.7	-1.0	0

A survey of the net changes at the third grade shows that the MES group improved by .1 of a school year in word knowledge while the No MES group lost .2 of a school year in relation to the norms over the elapsed period of time.

At the fourth grade both the MES and No MES groups showed net changes of -.2 of a school year.

However, at the fifth grade the MES group moved from an initial point .9 of a school year below the norm to .4 of a school year below the norm at final test time resulting in a net change of .5 of a school year. With respect to the No MES group no change occurred - it was 1 year below the norms at initial and final test times resulting in a net change of zero.

In general, the pattern of results in word knowledge for these two compared groups of schools followed the same trend as that found in reading comprehension, namely, moderate positive gains of the MES groups over the control groups.

Reading Progress of New ME and Control Schools

A comparison of individually paired experimental and control groups was undertaken utilizing three New ME schools and three control schools matched on ethnicity and presence or absence of the special service factor. Two of the three pairs of schools are special service schools and one pair consists of non-special service schools. Results based only on special service school groups will be presented subsequently.

Reading comprehension grade scores and the net changes in relation to the norms for the two groups of schools at grades three, four and five are given in Table 9.

Table 9

Comparison of Grade Norms with Median Grade Scores on the Metropolitan Reading Comprehension Initial and Final Tests for Pupils Having 2 Years of MES Experience in 3 New ME Schools with Pupils in 3 Paired Control Schools

Grade as of 4/67	Education	N	Median	10/65		Comparison with Norm	Median	4/67		Net Change
				Norm at Testing				Norm at Testing	Comparison with norm	
Third	2 Years of MES	172	1.7	2.1		- .4	3.6	3.7	- .1	+ .3
	No MES	202	1.6	2.1		- .5	3.3	3.7	- .4	+ .1
Fourth	2 Years of MES	180	2.5	3.1		- .6	4.2	4.7	- .5	+ .1
	No MES	216	2.3	3.1		- .8	3.7	4.7	-1.0	- .2
Fifth	2 Years of MES	192	3.2	4.1		- .9	4.9	5.7	- .8	+ .1
	No MES	204	3.2	4.1		- .9	4.6	5.7	-1.1	- .2

An inspection of the net changes reveals that at grade three the MES group improved .3 of a school year in relation to the norms while the control group improved by .1 of a school year. At grade four and grade five the MES groups improved by .1 of a school year while the No MES group became more retarded by .2 of a school year from October, 1965 to April, 1967.

Results for the two groups of schools in word knowledge for grades three, four and five are presented in Table 10.

Table 10

Comparison of Grade Norms with Median Grade Scores
in Word Knowledge at Initial and Final Testings
for Pupils Having 2 Years of MES Experience in
3 Selected New ME Schools with Pupils in 3
Paired Control Schools

Grade as of 4/67	Education	N	Median	10/65		4/67			Net Change
				Norm at Testing	Comparison with Norm	Median	Norm at Testing	Comparison with norm	
Third	2 Years of MES	172	1.7	2.1	- .4	3.3	3.7	- .4	.0
	No MES	202	1.5	2.1	- .6	3.1	3.7	- .6	.0
Fourth	2 Years of MES	180	2.4	3.1	- .7	4.6	4.7	- .1	+ .6
	No MES	216	2.2	3.1	- .9	3.5	4.7	-1.2	- .3
Fifth	2 Years of MES	192	3.0	4.1	-1.1	5.3	5.7	- .4	+ .7
	No MES	204	3.0	4.1	-1.1	4.9	5.7	- .8	+ .3

At the third grade the net change was zero for both groups. The MES group was .4 of a school year below the norms at initial and final test times; the No MES groups was .6 of a school year below the norms at initial and final test times.

However, at the fourth and fifth grades the MES groups showed more improvement in relation to the norms over the period studied than the control groups. For example, at the fourth grade the MES group reduced their retardation by .6 of a school year while the control group became more retarded by .3 of a school year from initial to final testings. At the fifth grade both groups tested at a grade score of 4.1 in October, 1965, that is, 1.1 school years below norm; in April, 1967 the MES group was .4 school year below the norm while the control group was .8 of a school year below the norm.

In general, the results in reading comprehension and word knowledge for the New ME schools and their paired controls reveal a positive picture for the former group. The pupils in the New ME schools as a group show more improvement in read-

ing and a slower retardation rate in relation to the norms as compared to pupils in the control group.

Reading Progress in Special Service ME and Control Schools

Reading Progress in Old ME and Control Schools

Another question for which an answer was sought concerned the comparison of reading achievement of MES and Non MES pupil groups in special service schools. The foregoing comparisons involved special service and non-special service schools in both ME schools and control schools. The analysis involving only special service schools was undertaken to determine whether the moderate positive gains revealed for the MES special service and non-special service schools were due mainly to the efforts of the pupils in the non-special service schools. In other words, the question was, How does MES achievement compare with Non-MES achievement when the results from special service schools are analyzed separately? The results of four ME special service schools and four control special service schools matched on ethnic background are presented in Table 11.

Table 11

Comparison of Grade Norms and Median Grade Scores on the Metropolitan Reading Comprehension Initial and Final Tests for Pupils Having 3 Years of MES Experience in 4 Selected Special Service Old ME Schools with Pupils in 4 Paired Special Service Control Schools

Grade as of 4/67	Education	N	10/65 Median	10/65 Norm	Md-N Diff.	4/67 Median	4/67 Norm	Md-N Diff.	Net Change
Third	3 Years of MES	251	1.7	2.1	-.4	3.7	3.7	0	+.4
	No MES	403	1.7	2.1	-.4	3.3	3.7	-.4	0
Fourth	3 Years Of MES	208	2.5	3.1	-.6	3.8	4.7	-.9	-.3
	No MES	439	2.3	3.1	-.8	3.6	4.7	-1.1	-.3
Fifth	3 Years of MES	209	3.3	4.1	-.8	4.8	5.7	-.9	-.1
	No MES	340	3.1	4.1	-1.0	4.1	5.7	-1.6	-.6

As indicated in Table 11 the third grade MES group showed a positive net change of .4 of a school year; the No MES group showed no change (0) in relation to the norm over the period studied. Both groups tested at a grade score of 1.7 in October, 1965, however, the MES group reached the norm of 3.7 while the control school tested at 3.3, four school months below the norm in April, 1967. At the fourth grade a net change of -.3 of a school year was observed for both the MES and No MES groups.

At the fifth grade the MES group lost .1 of a school year in relation to the norms at initial and final test times, while the No MES group lost .6 of a school year in relation to the norms over the period studied. In other words, the net change for the MES group was a loss of .1 school year compared to a loss of .6 of a school year for the control group over the 1.6 school year period.

Thus, in two of the three grade comparisons the MES pupils showed more improvement or less retardation than the control pupils.

In Table 11 and similar earlier tables, net changes of deviations of obtained median grade scores from the norms at initial and final test times were expressed in terms of tenths of a school year. For example, in Table 11, for the third grade three-year MES group, the net change was .4 of a school year over the elapsed period of 1.6 school year while the net change for the third grade No MES group was zero. The net changes were in terms of deviations of medians, a group measure, from the norms. It occurred to the researchers to interpret the net changes in terms of individual pupils. An index of change involving individuals utilized in this study is the per cent of pupils reaching and surpassing the norms at initial and final test times. This measure was applied to the data presented in Table 11 and the results are presented in Table 11a.

Table 11a

Comparison of Percents at Grade Norm and Above on the Metropolitan Reading Comprehension Initial and Final Tests of Pupils Having 3 Years of MES Experience in 4 Selected Special Service Old ME Schools with Pupils in 4 Paired Selected Special Service Control Schools

Grade as of 4/67		10/65	N at or above norm	% at or above norm	% Diff. MES-No MES	4/67	N at or above norm	% at or above norm	% Diff. MES-NoMES	Net Change in %
Third	MES (251)	2.1	72	28.7	3.6	3.7	129	51.4	20.4	16.8
	No-MES(403)	2.1	101	25.1		3.7	125	31.0		
Fourth	MES (208)	3.1	35	16.8	-5.5	4.7	55	26.4	5.0	10.5
	No-MES(439)	3.1	98	22.3		4.7	94	21.4		
Fifth	MES (209)	4.1	40	19.1	7.0	5.7	55	26.3	13.9	6.9
	No-MES(340)	4.1	41	12.1		5.7	42	12.4		

As indicated in Table 11a, of 251 MES third grade pupils, 72 or 28.7 per cent were at or surpassed the norm of 2.1 in October, 1965 as against 25.1 per cent or 101 of the 403 pupils in the third grade control group. The MES - No MES per cent difference was 3.6, that is, 3.6 per cent more MES pupils scored at or above the norm at initial test time. However, in April 1967, the corresponding MES - No MES per cent difference was 20.4 (51.4 - 31.0). The net change in per cent over the 1.6 school year was obtained by subtracting the initial per cent difference, 3.6, from the final per cent difference, 20.4. For the third grade comparison of MES and control groups the net change in percent was 16.8, that is, 16.8 per cent more of the MES pupils score at or above the norm over the period from initial to final test times than was the case for the control group.

At the fourth grade at initial test time, 5.5 per cent (16.8 - 22.3) more of the No-MES group scored at or above the norm at initial test time as compared to the MES group. However, in April, 1967, 5 per cent (26.4 - 21.4) more of the MES pupils scored at or above the norm than the control group. The net MES - non-MES

change was 10.5 per cent in favor of the MES group. At the fifth grade the net change was 6.9 per cent also in favor of the MES group.

Briefly, at all grade levels larger per cents of pupils in the MES groups scored at or above the norms as they moved up the grades over the 1.6 school years as compared to pupils in the control groups. The largest net increase of per cents of pupils scoring at or above the norms was at the third grade, 16.8; the smallest net per cent increase appeared at the sixth grade, 6.9.¹

Results in word knowledge for the two groups of special service schools are presented in Table 12. In this particular analysis the number of MES pupils involved at each grade was increased by adding pupils who were enrolled in the ME school no less than two years to the original pupils who were enrolled in ME schools for at least three years.

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1. A t-test analysis of the per cents at or above the norm as presented in Table 11a was undertaken. At each grade the per cent differences between the two groups at initial and at final test times were checked for statistical significance. In this analysis the net changes in per cents are not involved.
At the third grade the per cent difference (MES - No MES) at initial test time was 3.6; at final test time the corresponding per cent (MES - No MES) at final test time was 20.4. At initial test time the 3.6 per cent difference was not statistically significant; at final test time the 20.4 per cent difference was found to be statistically significant at less than the 1 per cent level of confidence.
At the fourth grade the per cent differences (MES - No MES) at initial and final test times were both not statistically significant.
At the fifth grade the per cent difference (MES - No MES) was statistically significant at initial test time in favor of the MES group; the level of statistical significance was increased in favor of the MES group at final test time.

Table 12

Comparison of Grade Norms and Median Grade Scores on the Metropolitan Word Knowledge Initial and Final Tests for Pupils Having No less Than 2 Years MES Experience in 4 Special Service Old ME Schools with Pupils in 4 Paired Special Service Schools

Grade as of 4/67	Education	N	Median	10/65 Norm	Md-N Diff.	Median	4/67 Norm	Md-N Diff.	Net Change
Third	2 - 3 Years of MES	300	1.8	2.1	- .3	3.6	3.7	- .1	+ .2
	No MES	388	1.6	2.1	- .5	3.0	3.7	- .7	- .2
Fourth	2 - 3 Years of MES	313	2.3	3.1	- .8	3.7	4.7	-1.0	- .2
	No MES	439	2.1	3.1	-1.0	3.4	4.7	-1.3	- .3
Fifth	2 - 3 Years of MES	291	3.0	4.1	-1.1	5.0	5.7	- .7	+ .4
	No MES	340	3.0	4.1	-1.1	4.1	5.7	-1.6	- .5

A comparison of the net changes for the MES and No MES groups reveals that at each of the three grade levels the former group showed less retardation in relation to the norms. For example, at the fifth grade the MES group reduced their retardation from 1.1 school years in October, 1965 to .7 of a school year below the norm in April, 1967. On the other hand, the fifth grade No MES group was .5 of a school year more retarded in 1967 than it was in 1965, that is, this group was 1.1 school years below the norm at initial test time but 1.6 school years below norm in April, 1967.

In summary, based on the results of the Old ME and control groups of special service schools the findings point to a more favorable picture of improvement in reading on the part of the ME groups as compared to the control groups. It is clear that the rate of retardation among the MES pupils is slower than that of the No MES pupils.

Reading Progress of New MES and Control Schools

What do the results indicate when the analyses of reading scores involved the two pairs of New ME and control special service schools?

- The results for reading comprehension are presented in Table 13.

Table 13

Comparison of Grade Norms with Median Grade Scores
in Reading at Initial and Final Testings for Pupils
Having 2 Years of MES Experience in 2 Special
Service New MES Schools with Pupils in 2
Paired Special Service Control Schools

Grade as of 4/67	Education	N	Median	10/65		4/67		Net Change
				Norm at Testing	Comparison with Norm	Median	Norm at Testing	
Third	2 Years of MES	83	1.6	2.1	- .5	3.7	3.7	+ .5
	No MES	121	1.6	2.1	- .5	3.3	3.7	+ .1
Fourth	2 Years of MES	97	2.2	3.1	- .9	3.8	4.7	.0
	No MES	132	2.3	3.1	- .8	3.7	4.7	- .2
Fifth	2 Years of MES	97	3.1	4.1	-1.0	4.9	5.7	+ .2
	No MES	127	3.1	4.1	-1.0	4.6	5.7	- .1

A review of the net changes reveals a more positive picture for the MES groups as compared to the No MES groups. The greatest improvement of the MES group over the control group is at the third grade. At the fourth grade the MES group showed no gain or loss in relation to the norms over the period studied while the control group showed a loss of .2 of a school year. At the fifth grade the MES group showed a net change of +.2 of a school year while that of the control group was -.1 of a school year.

Table 13a

Comparison of Percents at Grade Norm and Above on the Metropolitan Reading Comprehension Initial and Final Tests of Pupils Having 2 Years of MES Experience in 2 Selected Special Service New ME Schools with Pupils in 2 Paired Selected Special Service Control Schools

Grade as of 4/67	Education Norm	10/65			4/67			Net Change in %
		N at or above norm	% at or above norm	% Diff. MES-No MES	N at or above norm	% at or above norm	% Diff. MES-NoMES	
Third	2 Years of MES(83)	2.1	15	18.1	3.7	42	50.6	22.6
	NoMES(121)	2.1	23	19.0	3.7	35	28.9	
				- .9			21.7	
Fourth	2 Years of MES(97)	3.1	18	18.6	4.7	25	25.8	.4
	NoMES(132)	3.1	24	18.2	4.7	33	25.0	
				.4			.8	
Fifth	2 Years of MES(97)	4.1	6	6.2	5.7	23	23.7	12.0
	NoMES(127)	4.1	21	16.5	5.7	28	22.0	
				-10.3			1.7	

Again a comparison was made of the per cents of pupils in both groups who scored at or above the norms at initial and final test times.

Table 13a shows the results of the analysis using the data in reading comprehension for the two pairs of New ME and control special service schools. Again the net improvement in number of pupils scoring at or above the norms from initial to final test times was clear at the third and fifth grades, namely, a net change of 22.6 per cent in favor of the MES third grade group and 12.0 per cent of the MES fifth grade group. At the fourth grade the net change in per cent in favor of the ME was .4 per cent.

The results for word knowledge for the two pairs of New ME and control schools are presented in Table 14.

Table 14

Comparison of Grade Norms with Median Grade Scores in Word Knowledge at Initial and Final Testings for Pupils Having 2 Years of MES Experience in 2 Special Service New MES Schools with Pupils in 2 Paired Special Service Control Schools

Grade as of 4/67	Education	N	Median	10/65		Median	4/67		Net Change
				Norm at Testing	Comparison with Norm		Norm at Testing	Comparison with Norm	
Third	2 Years of MES	83	1.6	2.1	- .5	3.3	3.7	- .4	+ .1
	No MES	121	1.5	2.1	- .6	3.2	3.7	- .5	+ .1
Fourth	2 Years of MES	97	2.1	3.1	-1.0	4.5	4.7	- .2	+ .8
	No MES	132	2.1	3.1	-1.0	3.7	4.7	-1.0	.0
Fifth	2 Years of MES	97	2.9	4.1	-1.2	5.4	5.7	- .3	+ .9
	No MES	127	2.9	4.1	-1.2	4.9	5.7	- .5	+ .7

An inspection of the net changes of the two groups reveals that, except at the third grade where both groups showed equivalent improvement, in relation to the norms, the MES groups showed greater improvement than the control groups at the other two grade levels. The superiority of the MES fourth grade group over its control group was the largest one found.

In summary, based on the results of New MES and control pairs of special service schools, the findings in two of the three grade comparisons reveal results favoring the MES groups.

Summary

This report compares the reading progress of More Effective and control schools. Participating in this study were 10 More Effective schools which entered the program in the Fall of 1964 and 11 More Effective schools which entered the program in the Fall of 1965. Control pupils were drawn from 9 schools. The participating schools included special service and non-special service schools.

This study utilized a longitudinal approach in analyzing the reading progress of pupils in the More Effective and control schools. The schools were matched in ethnic composition of the pupil populations. In some comparisons the More Effective and control schools were group matched; in other comparisons the schools were individually paired on ethnic and special service school factors.

Reading progress of the two groups of schools were measured in terms of reading grade scores on alternate forms of the Metropolitan Reading Achievement Test given initially in October, 1965 and finally in April, 1967. The period of time between initial and final tests was 1.6 school years.

More Effective schools and control schools were compared on the test results for current (1967) third, fourth, fifth and sixth grade pupils who at initial test time in October, 1965 were in the second, third, fourth and fifth grades respectively. In other words, the same pupils were followed as they moved from grade to grade. In assessing the achievement of the pupils in the two groups of schools, growth in grade scores on the various levels of Metropolitan Reading Test observed over the period from initial and final test times were compared.

In the Old More Effective schools two groups of pupils were formed. One group consisted of pupils who were enrolled in the same schools for 3 years; the second group of pupils was composed of pupils who were enrolled in the same schools for about 2 years. These two Old MES pupil groups were compared with the pupils who were enrolled in the control schools for about 2 years.

In the comparisons between New More Effective schools and the control schools pupils who were enrolled in their respective schools for about 2 years were employed.

All comparisons between the More Effective schools and the control schools involved the combined results for each group of schools by grade level.

Separate comparisons of Old More Effective and New More Effective schools with their controls were undertaken. Some of the comparisons involved experimental and control schools group-matched on ethnic factor; other comparisons involved experimental and control schools individually paired on ethnic factor. In some of these comparisons the contrasted groups of schools included a combination of special service and non-special service; in other comparisons only special service schools were included in both groups of schools. The purpose of the latter comparison was to determine whether the trends revealed by the results in groups of schools which included both special service and non-special service were still evident when only special service schools were involved.

Major Findings

Reading Progress in More Effective and Control Schools Group-Matched

A comparison of the results for the ten Old More Effective schools combined and those for the six control schools combined revealed that only at the third grade did the 3 year MES group reach the norm for the grade at final test time. However, the control groups always were more retarded in relation to the norm than were the corresponding 3 year MES groups. In addition, at grades 3, 4 and 5, where complete data were available, the 2 year MES groups were less retarded than the corresponding control groups at grades three and five; at grade 4 both groups showed the same amount of retardation at final test time. Both the 3 year MES and the 2 year MES groups gained more in grade score over the 1.6 school year period than the corresponding control groups. Overall there is a consistent pattern of more gain in grade score by the MES groups when compared

with the gains of the corresponding control groups; the MES gains over the controls varied from 1 to 3 school months. A gain of 3 school months (.3 of a school year) more than the control group gain appeared at the third grade. A .3 of a school year gain over a 1.6 school year period represents a 19 per cent superiority over the controls at the third grade level. In terms of grade score achieved at final test time a moderate positive relationship may be discerned between years of MES experience and reading level attained.

With respect to the comparisons of 10 New ME schools combined and 3 control schools combined a review of the data reveals that the MES grade groups showed more improvement in reading level in relation to the norms than did the corresponding control pupil grade groups. More specifically, the net changes in relation to the norms were from .1 of a school year in favor of the MES group at the fifth grade to .3 of a school year at the third and sixth grades. In general, the positive trend in favor of the New MES groups paralleled that observed in the comparisons involving the Old ME schools and their controls.

Reading Progress in Paired More Effective and Control Schools

The study of the experimental and control schools was continued to include an analysis of the test results in reading comprehension and word knowledge of schools individually matched on the ethnic factor at grades 3, 4 and 5. The six pairs of schools consisted of special service and non-special service schools.

In two of the three grade comparisons between the 6 Old ME schools combined and 6 control schools combined the net changes in reading comprehension grade scores in relation to norms at initial and final test times indicated more improvement in reading on the part of the Old MES groups; however, at the fourth grade the net change for the two groups of schools was identical. Specifically, the MES third grade group tested .2 of a school year below norm at initial test time but reached the norm of 3.7 at final test time. On the other hand, the corresponding third grade No MES group tested .3 of a school year below

norm at initial test time and was still .3 of a school year below norm at final test, 1.6 school years later. At the fifth grade the MES group was .2 of a school year less retarded than the No MES group at initial test time; at final test time the MES group was .4 of a school year less retarded than the No MES group. Thus at the fifth grade the MES group showed an overall net change of .2 of a school year reduction in retardation as compared to the control group.

The pattern of results in word knowledge followed the same general trend as that found in reading comprehension, namely, moderate positive gains by the Old MES groups over the control groups.

For the 3 New ME schools and their 3 control counterparts the results in reading comprehension and word knowledge revealed a positive picture for the former schools. The pupils in the New ME schools, as a group, show more improvement in reading and a slower retardation rate in relation to the norms as compared to the pupils in the control groups. Specifically, the MES groups at grades 3, 4 and 5 showed a net reduction in reading retardation of from .2 to .3 of a school year compared with the amount of reduction for the corresponding control grade groups.

Reading Progress in Paired Special Service More Effective and Control Schools

Another analysis was concerned with the question, How does reading achievement in More Effective schools compare with that of control schools when all the schools concerned are special service schools? Four pairs of Old More Effective and control schools were used. The pairs of schools were individually matched on ethnic and special service factors. Based on the results of the Old More Effective and paired control pupil groups at grades 3, 4 and 5 the findings point to a more favorable picture in reading comprehension and word knowledge on the part of the Old More Effective groups. The More Effective School pupils showed less retardation in reading in relation to the norms from initial to final test times. Specifically, the Old MES third and fifth grade

groups showed net reduction in reading retardation of .4 and .5 of a school year respectively compared with the amount of reduction for the corresponding control grade groups. No difference in reading retardation rate, however, was found between the fourth grade MES and control groups.

This positive trend in favor of the MES pupils was also present in the comparisons of 2 pairs of New ME and control special service schools.

Up to this point the comparisons between ME and control schools were in terms of gains in median grade scores and net changes in deviations of the observed median grade scores from norms at initial and final test times. The question was raised, How would the two groups of schools compare when the net changes are indicated in terms of individual pupils? An index of change involving individuals that was used for comparison was the per cent of pupils reaching and surpassing the norm at initial and final test times.

Employing the same four pairs of Old ME and control schools reported earlier, it was found that, at all grade levels, larger per cents of pupils in the MES groups scored at or above the norms as they moved up the grades over the 1.6 school years as compared to pupils in the control groups. For example, the largest net increase of per cents of pupils scoring at or above the norms from initial to final test times was 16.8 at the third grade; the smallest net per cent increase, 6.9, appeared at the fifth grade. Employing two pairs of New ME and control schools the per cent net increase of pupils reaching and surpassing the norms from initial to final test times were 22.6 at the third grade, .4 per cent at the fourth grade and 12.0 per cent at the fifth grade. These per cent increases were all in favor of the MES pupils.

Conclusions

Based on the longitudinal comparisons of pupils in Old and New More Effective Schools and pupils in control schools certain conclusions may be drawn. The conclusions are based on objective test data of third, fourth, fifth and sixth grade groups in More Effective and control schools. The results indicate that:

1. There is a consistent pattern of more improvement in reading progress by the Old and New MES groups as compared to corresponding control groups. Overall, the average improvement in grade score of MES pupils over the control pupils was slightly more than .3 of a school year at the third grade, .1 of a school year at the fourth grade, almost .3 of a school year at the fifth grade and .2 of a school year at the sixth grade. A .3 of a school year gain is equivalent to an improvement of 18.8 per cent over the elapsed period of 1.6 school years.
2. The reduction in reading retardation was, in general, greater for the MES groups as compared to that for the control groups.

In 17 of the 20 comparisons involving median reading comprehension grade scores of Old and New MES and their respective control grade-groups, the MES groups exhibited greater gains than the controls. In the remaining three comparisons equivalent functioning was observed only between the Old MES and control fourth grade groups. Thus at no time did a control grade-group surpass its corresponding MES grade-group in reading achievement growth over the period of study.

In summary, based on the participating pupil groups studied, the More Effective Schools as a group were more effective than the control schools in (1) reducing the reading retardation of their pupils and (2) in producing larger per cents of pupils who reached and surpassed the norm from initial to final test times during the 1.6 school year period.

In general these conclusions hold for comparisons involving groups of ME schools and control schools group-matched or individually paired as well as for comparisons of matched special service ME schools and control schools.

These conclusions in the area of pupil reading achievement are at variance with those reported in the study of the ME schools conducted by the Center for Urban Education. The latter study reported, ". . . that the MES program has made no significant difference in the functioning of children . . . in mathematics or reading on standardized tests." In addition, it was reported that, "Children tested in the fourth grade and fifth grade after three years of MES, were further behind the standards of normal progress than when they began the program, and the children tested in the sixth grade were no better off."¹ In accounting for the difference in the findings of the two studies, it should be noted that in the present study, as compared to that of the Center for Urban Education, a rigorous longitudinal approach was followed and control groups were employed in all comparisons.

1. Fox, David J. Expansion of the More Effective School Program, Center for Urban Education, New York, 1967. P. 121.